WHAT IS CLAIMED IS:

1. A video encoding method of encoding an input video signal by a motion compensation predictive interframe encoding, comprising:

selecting, from a plurality of predictive modes, a predictive mode including determining a motion vector of a to-be-encoded pixel block by using a motion vector of an encoded pixel block of a reference frame adjacent to the to-be-encoded frame;

computing a first cost of encoding based on the selected predictive mode;

computing a second cost of encoding based on a direct mode including determining a motion vector of the to-be-encoded pixel block from a motion vector of an encoded block around the to-be-encoded pixel block;

comparing the second cost with the first cost to determine one of the selected predictive mode and the direct mode as a determined predictive mode; and

encoding the pixel block by the motion compensation predictive encoding according to the determined predictive mode.

2. A video encoding method of encoding an input video signal by a motion compensation predictive interframe encoding, comprising:

selecting, from a plurality of predictive modes, a predictive mode including determining a motion vector of a to-be-encoded pixel block by using a motion vector

of an encoded pixel block of a reference frame adjacent to the to-be-encoded frame;

computing a first cost of encoding based on the selected predictive mode;

computing a second cost of encoding based on a direct mode including determining a motion vector of the to-be-encoded pixel block from a motion vector of an encoded block around the to-be-encoded pixel block;

comparing the second cost with the first cost to determine one of the selected predictive mode and the direct mode as a determined predictive mode; and

encoding the pixel block by the motion compensation predictive encoding according to the determined predictive mode, using a motion compensation parameter including at least one of motion vector information, reference frame selection information and pixel block shape information, the motion vector information being motion vector information of the encoded pixel block in the reference frame just before the to-be-encoded pixel frame, the encoded block being located at the same position as the to-be-encoded pixel block.

3. The video encoding method according to claim 2, which includes determining the motion compensation parameter, using a macroblock of a reference frame encoded last that is located at spatially the same position as the to-be-decoded

macroblock.

4. The video encoding method according to claim 2, which includes determining the motion compensation parameter, using a reference frame encoded by a minimum encode length.

5. The video encoding method according to claim 1, wherein selecting the predictive mode includes detecting a motion vector using a block shape of the pixel block and the reference frame, generating a predictive signal using the detected motion vector, generating a predictive error signal from the predictive signal and a signal of the to-be-encoded pixel block, computing an encoding cost in the predictive mode, updating the block shape according to the encoding cost and an index of the reference frame, and repeating motion detection and cost computation for all reference frames to determine the predictive mode.

6. The video encoding method according to claim 1, which includes switching the direct mode between a first mode and a second mode depending on whether a future reference frame exists with respect to the to-be-encoded frame, the first mode using a correlation with respect to past and future frames, and the second mode using a correlation with respect to the past frame.

7. The video encoding method according to claim 1, which includes switching the direct mode

between a first mode and a second mode when a picture order of a reference frame with respect to the to-be-encoded frame is higher than the picture order of the to-be-encoded frame, the first mode using a correlation with respect to past and future frames, and the second mode using a correlation with respect to the past frame.

8. The video encoding method according to claim 1, which includes switching the direct mode between a first mode and a second mode when a picture order of a reference frame with respect to the to-be-encoded frame is higher than the picture order of the to-be-encoded frame, and the picture order of a reference frame corresponding to a block that is located at the same position as the to-be-encoded block is lower than the picture order of the to-be-encoded frame and it is not so, the first mode using a correlation with respect to past and future frames, and the second mode using a correlation with respect to the past frame.

9. The video encoding method according to claim 1, which includes computing a size of a motion vector between adjacent pixel blocks in an encoded frame, and changing the direct mode between a first mode and a second mode depending on whether or not a size of the motion vector exceeds a given value, the first mode using a correlation with respect to past

and future frames, and the second mode using a spatial a correlation.

10. The video encoding method according to claim 1, which includes computing a size of a motion vector between adjacent pixel blocks in an encoded frame, and changing the direct mode to a first mode when the size of the motion vector exceeds a given value and there is a backward frame, to a second mode when the size of the motion vector exceeds the given value and there is no backward frame, and to a third mode when the size of the motion vector is less than the given value, the first mode using a correlation with respect to past and future frames, and the second mode using a correlation with respect to the past frame, and the third mode using a spatial correlation.

11. The video encoding method according to claim 1, which includes computing a size of a motion vector between adjacent pixel blocks in an encoded frame, and changing the direct mode to a first mode when the size of the motion vector exceeds a given value and a picture order of a reference frame with respect to the to-be-encoded frame is higher than the picture order of the to-be-encoded frame, to a second mode when the size of the motion vector exceeds the given value and a picture order of a reference frame with respect to the to-be-encoded frame is lower than the picture order of the to-be-encoded frame, and to

a third mode when the size of the motion vector is less than the given value, the first mode using a correlation with respect to past and future frames, and the second mode using a correlation with respect to the past frame, and the third mode using a spatial correlation.

12. The video encoding method according to claim 1, which includes computing a size of a motion vector between adjacent pixel blocks in an encoded frame, and changing the direct mode to a first mode when the size of the motion vector exceeds a given value and a picture order of a reference frame with respect to the to-be-encoded frame is higher than the picture order of the to-be-encoded frame, and the picture order of a reference frame corresponding to a block that is located at the same position as the to-be-encoded block is lower than the picture order of the to-be-encoded frame, to a second mode when the size of the motion vector exceeds the given value and a picture order of a reference frame with respect to the to-be-encoded frame is higher than the picture order of the to-be-encoded frame, and the picture order of a reference frame corresponding to a block that is located at the same position as the to-be-encoded block is higher than the picture order of the to-be-encoded frame, and to a third mode when the size of the motion vector is less than the given value, the first mode

using a correlation with respect to past and future frames, and the second mode using a correlation with respect to the past frame, and the third mode using a spatial correlation.

13. The video encoding method according to claim 1, which includes executing the direct mode by an interpolative prediction using two frames between which the to-be-encoded frame is interposed.

14. The video encoding method according to claim 1, which includes executing the direct mode by using a motion vector of a pixel block that refers to a flame near to the to-be-encoded frame with respect to time.

15. The video encoding method according to claim 1, which includes executing the direct mode by using motion vectors of adjacent encoded pixel blocks that refer to past and future flames near to the to-be-encoded frame with respect to time.

16. A video encoding method of encoding an input video signal, comprising:

selecting, from a plurality of predictive modes, a predictive mode including determining a motion vector of a to-be-encoded pixel block using a motion vector of an encoded pixel block of a reference field adjacent to the to-be-encoded field;

computing a first cost of encoding based on the selected predictive mode;

computing a second cost of encoding based on a direct mode including determining a motion vector of the to-be-encoded pixel block from a motion vector of a block around the to-be-encoded pixel block;

comparing the second cost with the first cost to determine an optimum predictive mode; and

encoding the pixel block by the motion compensation predictive encoding according to the optimum predictive mode.

17. A video encoding method of encoding an input video signal, comprising:

selecting, from a plurality of predictive modes, a predictive mode including determining a motion vector of a to-be-encoded pixel block using a motion vector of an encoded pixel block of a reference field adjacent to the to-be-encoded field;

computing a first cost of encoding based on the selected predictive mode;

computing a second cost of encoding based on a direct mode including determining a motion vector of the to-be-encoded pixel block from a motion vector of a block around the to-be-encoded pixel block;

comparing the second cost with the first cost to determine an optimum predictive mode; and

encoding the pixel block by the motion compensation predictive encoding according to the optimum predictive mode, using a motion compensation

parameter including at least one of motion vector information, reference field selection information and pixel block shape information, the motion vector information being motion vector information of the encoded pixel block in the reference field nearly before and having the same phase as the to-be-encoded pixel field which is at the same position as the to-be-encoded pixel block.

18. The video encoding method according to claim 17, which includes determining the motion compensation parameter, using a macroblock of a reference field encoded last that is located at spatially the same position as the to-be-decoded macroblock and the same phase as it.

19. A video decoding method of decoding encoded video data every pixel block, comprising:

determining whether a predictive mode of the encoded video data is a direct mode;

reading a first motion compensation parameter from the encoded video data when the predictive mode fails to be the direct mode;

determining a type of the direct mode when the predictive mode is the direct mode to generate a second motion compensation parameter of a peripheral pixel block;

generating a first predictive picture using the first motion compensation parameter; and

generating a second predictive picture using a peripheral decoded block according to the second motion compensation parameter; and

decoding the first predictive picture and the second predictive picture.

20. The video decoding method according to claim 19, which includes decoding the encoded data to obtain motion vector information, reference frame selection information and pixel block shape information; and the decoding includes decoding the first predictive picture and the second predictive picture every pixel block, using at least one of the motion vector information, the reference frame selection information and the pixel block shape information, the motion vector information being motion vector information of the encoded pixel block in the reference frame just before the to-be-encoded pixel frame which is at the same position as the to-be-encoded pixel block.